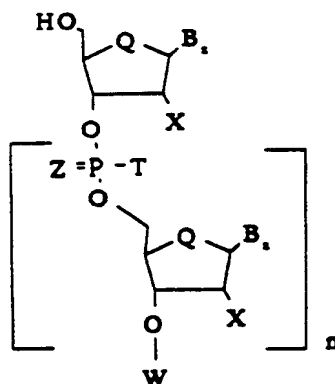
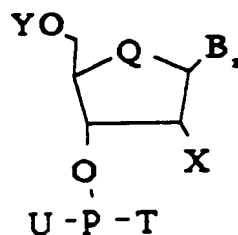


What is claimed is:

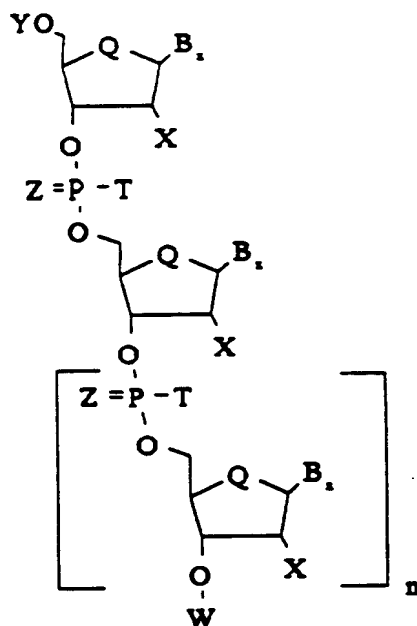
1. A method for the solution phase preparation of an oligonucleotide comprising reacting, in solution, a first synthon having the structure



with a second synthon having the structure



- 5 to form a moiety having the structure



where each Q is independently O, S, CH<sub>2</sub>, CHF or CF<sub>2</sub>;

each B<sub>x</sub> is independently a nucleosidic base;

each X is independently, OH, SH, SCH<sub>3</sub>, F, OCN,

O(CH<sub>2</sub>)<sub>n</sub>NH<sub>2</sub>, O(CH<sub>2</sub>)<sub>n</sub>CH<sub>3</sub>, where n is from 1 to about 10; C<sub>1</sub> to C<sub>10</sub> lower alkyl, substituted lower alkyl, alkaryl or aralkyl; Cl, Br, CN, CF<sub>3</sub>, OCF<sub>3</sub>, O-, S-, or N-alkyl; O-, S-, or N-alkenyl; SOCH<sub>3</sub>, SO<sub>2</sub>CH<sub>3</sub>; ONO<sub>2</sub>; NO<sub>2</sub>; N<sub>3</sub>; NH<sub>2</sub>; heterocycloalkyl; heterocycloalkaryl; aminoalkylamino; polyalkylamino; substituted silyl; an RNA cleaving group; a conjugate; a reporter group; an intercalator; a group for improving the pharmacokinetic properties of an oligonucleotide; or a group for improving the pharmacodynamic properties of an oligonucleotide;

each Y is independently a 5' hydroxyl protecting group;

W is a 3' hydroxyl protecting group;

each Z is independently O or S;

each T is independently a phosphorous blocking group;

U is a phosphite activating group; and

n is an integer from 0 to 50.

2. The process of claim 1 wherein each group T is  $R_3R_4R_5$ silylalkoxy wherein  $R_3$ ,  $R_4$  and  $R_5$  are alkyl or aryl.

3. The process of claim 2 wherein each R is, independently, methyl or phenyl.

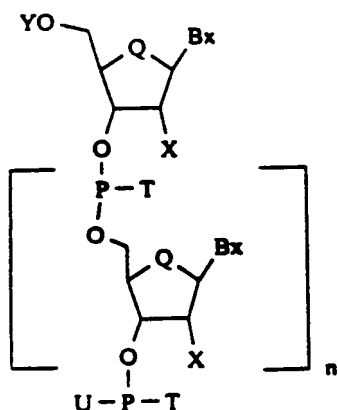
4. The process of claim 1 wherein U is a dialkylamino group.

5. The process of claim 1 wherein said second synthon is formed by reacting a reagent  $(R_1R_2N)_2PO(CH_2)_xSiR_3R_4R_5$ , wherein  $R_1$  and  $R_2$  independently are alkyl having 1 to about 10 carbon atoms, and  $R_3$ ,  $R_4$ , and  $R_5$  are, independently, alkyl having 1 to about 10 carbon atoms or aryl having 6 to about 10 carbons atoms, and x is 1 to about 7; with a nucleoside to form said second synthon.

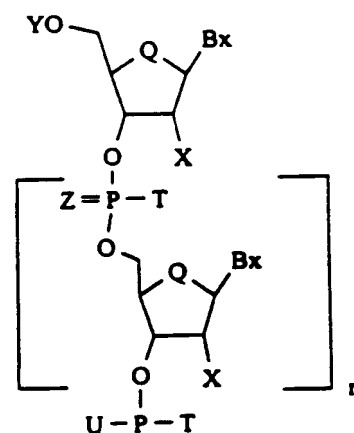
6. The process of claim 5 wherein the reaction takes place in the presence of 1H-tetrazole, 5-(4-nitrophenyl)-1H-tetrazole, or diisopropylammonium tetrazolide.

7. The process of claim 1 further comprising removing the groups W, T, and Y from the moiety and oxidizing the moiety to form either phosphorothioate or phosphodiester bonds.
8. The process of claim 1 further comprising transforming the moiety into a first synthon for iterative reaction with a further second synthon.
9. The process of claim 1 further comprising transforming the moiety into a second synthon for iterative reaction with a further first synthon.
10. A method for preparing an oligomer comprising reacting together, in solution,  
a first synthon comprising at least two nucleoside units and having a 5' location protected with a 5' hydroxylic blocking group and a 3' location substituted with a function having the formula
- U-P-T
- wherein U is a phosphite activating group and T is a phosphorous blocking group,
- with a second synthon comprising a nucleoside unit having a 3' location protected with a 3' hydroxylic blocking group and a 5' location capable of reacting with the U-P-T function.

11. The method of claim 10 wherein the product of the reaction is oxidized to form either phosphate or phosphorothioate internucleoside bonds.
12. The method of claim 10 wherein said second synthon comprises at least two nucleoside units.
13. The method of claim 10 wherein the function U-P-T is incorporated through reaction with a reagent  $(R_1R_2N)_2PO(CH_2)_xSiR_3R_4R_5$ , wherein  $R_1$  and  $R_2$  independently are alkyl having 1 to about 10 carbon atoms,  $R_3$ ,  $R_4$ , and  $R_5$  are, independently, alkyl having 1 to about 10 carbon atoms or aryl having 6 to about 10 carbons atoms, and  $x$  is 1 to about 7.
14. A compound having one of the formulas



or



where each Q is independently O, S,  $CH_2$ , CHF or  $CF_2$ ;  
 each  $B_x$  is independently a nucleosidic base;

each X is independently, OH, SH, SCH<sub>3</sub>, F, OCN, O(CH<sub>2</sub>)<sub>n</sub>NH<sub>2</sub>, O(CH<sub>2</sub>)<sub>n</sub>CH<sub>3</sub>, where n is from 1 to about 10; C<sub>1</sub> to C<sub>10</sub>, lower alkyl, substituted lower alkyl, alkaryl or aralkyl; Cl, Br, CN, CF<sub>3</sub>, OCF<sub>3</sub>, O-, S-, or N-alkyl; O-, S-, or N-alkenyl; SOCH<sub>3</sub>, SO<sub>2</sub>CH<sub>3</sub>; ONO<sub>2</sub>; NO<sub>2</sub>; N<sub>3</sub>; NH<sub>2</sub>; heterocycloalkyl; heterocycloalkaryl; aminoalkylamino; polyalkylamino; substituted silyl; an RNA cleaving group; a conjugate; a reporter group; an intercalator; a group for improving the pharmacokinetic properties of an oligonucleotide; or a group for improving the pharmacodynamic properties of an oligonucleotide;

each Z is independently O or S;

Y is H or a hydroxyl protecting group;

U is a phosphite activating group;

each T is independently a phosphorous blocking group; and

n is an integer from 1 to 200.

15. The compound of claim 14 wherein Q is O.

16. The compound of claim 14 wherein X is H, OH or O-alkyl.

17. The compound of claim 14 wherein T has the formula -O(CH<sub>2</sub>)<sub>x</sub>SiR<sub>3</sub>R<sub>4</sub>R<sub>5</sub>, wherein R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> are, independently, alkyl having 1 to about 10 carbon atoms or aryl having 6 to about 10 carbons atoms, and x is 1 to about 7.

18. A library comprising a plurality of compounds in accordance with claim 14.